Math 211
Quiz 23Z

W 07 Aug 2019

Your name : _____

Exercise

(5 pt) Solve the following nonhomogeneous 2nd-order linear initial value problem:

$$y'' + y' + y = e^{-t}, \qquad y(0) = 0, \qquad y'(0) = 1.$$

Hint: Recall that, from the definition of the lapace transform,

$$\mathcal{L}\{y'\}(s) = s\mathcal{L}\{y\} - y(0).$$

Applying this result to y'', we get

$$\mathcal{L}\{y''\}(s) = s\mathcal{L}\{y'\} - y'(0) = s^2\mathcal{L}\{y\} - sy(0) - y'(0).$$

The following transform–inverse-transform pairs may be useful:

$$\mathcal{L}\{e^{at}\} = \frac{1}{s-a},$$